

REMARKS

Claims 1-18 are currently pending in the patent application. The Examiner has rejected Claims 16-18 under 35 USC 112 as indefinite; has rejected Claims 1, 3-10, 12, 14, and 15 under 35 USC 102 as anticipated by Minamisawa; has rejected Claims 2, 11, 16, 17 and 18 under 35 USC 103 as being unpatentable over Minamisawa in view of Haartsen; and has rejected Claim 13 under 35 USC 103 as being unpatentable over Minamisawa in view of Tillgren.

In response to the indefiniteness rejection, Applicant respectfully requests reconsideration of the rejection. The term "Bluetooth" is, for one having skill in the art, a precisely-defined, device employing well-understood and standardized technology. "Bluetooth" is not simply a trademark applied to a radio system, but is a particular set of components and functionality. As such, use of the term "Bluetooth" in the claims is definite. Applicant further notes that the Patent Office has already "ruled" that the term is definite by allowing the recitation of Bluetooth in Claims 5 and 21 of the Tillgren patent, U. S. Patent number 6,339,706, which the Examiner has cited in the present Office Action.

The present invention is directed to a method, terminal, and network for dynamically and optimally forming a cluster of radio stations, the cluster comprising a cluster head and cluster members. Under the present invention, one of the plurality of radio stations operates as a tentative cluster head, monitors communication conditions with each of the cluster members and records the communication conditions in a table. If communication conditions with at least one cluster member are inadequate, each of the other cluster members are operated as the tentative cluster head for a preset period of time, during which communication conditions between that tentative cluster head and the other cluster members are monitored and recorded in a table. Once all of the cluster members have operated as the tentative cluster head, all of the data in the communication conditions tables are compared and a determination is made as to which cluster member should be the cluster head based on the most favorable communication conditions table data. All of the independent claims, some newly amended, recite that the cluster members each take a turn operating as the tentative cluster head and that a determination is made as to which cluster member should be the cluster head based on all of the monitored results for every tentative cluster member.

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-9-

In response to the anticipation rejections based on the Minamisawa patent, Applicant respectfully asserts that the claimed invention is neither anticipated by nor obviated by the Minamisawa patent teachings. The Minamisawa patent teaches a system and method for operating an ad hoc network of wireless terminals and for determining an optimal parent terminal for the ad hoc network system. Under the Minamisawa patent, each wireless terminal has both a parent wireless terminal controlling unit 119 and a child wireless terminal controlling unit 120 so that each wireless terminal may operate as either the parent or the child in the ad hoc network. Under Minamisawa, first, "...in the wireless terminal 100-1, the scanning unit 107 scans the wireless channels. When a sync signal is not received on the wireless channel 105 by the transmitting and receiving unit 108, the wireless terminal 100-1 is set as a parent wireless terminal by the control unit 101. Thus, the parent wireless terminal controlling unit 119 is activated to control the whole wireless terminal while the wireless terminal is set to the parent wireless terminal." When acting as the temporary parent, the wireless device collects state determination data from the child devices, wherein the state determination data includes the remaining power available to the child device and the data transmission rate. After

Minamisawa has collected the data, the temporary parent device determines if the data has been collected within K cycles, where K is predetermined and is "any positive integer." If the data has not been collected within the K cycles, another device is designated as the temporary parent and the process is repeated. If the data has been collected within the K cycles, then the temporary parent device selects one of the child devices to be the "true" parent device based on the single set of collected state determination data.

Minamisawa teaches that "[T]he parent wireless terminal selecting unit 118 of the parent wireless terminal 100-1 selects a new true parent wireless terminal based on the contents of the data base 123, i.e., the sent remaining power quantity data and the detected transmission rate data of the child wireless terminals 100-2 to 100-10." Minamisawa, therefore, teaches that one wireless terminal is selected to be the "**true** parent wireless terminal", wherein the parent terminal responsibilities should not change after the "true" terminal has been identified and designated for the network, and that the determination is made based on the one single set of state determination data which is collected within K cycles.

The Minamisawa patent does not teach or suggest that all child devices be given a "turn" as the temporary parent in order to assess the state determination data for all eligible wireless devices. Rather, Minamisawa simply selects the child device with the best state determination data that has been collected within K cycles. Once a set of state determination data has been collected within K cycles, that set of state determination data is used to select the "true" parent device. State determination data is not collected, therefore, for every device acting as a temporary parent terminal; but, only for as many as it takes to complete state determination data collection within K cycles. Moreover, even if Minamisawa collected state determination data for each wireless device acting as the temporary parent, it would not anticipate the invention as claimed, since Minamisawa does not make a parent device determination based on a comparison of the state determination data gathered for every terminal acting as a temporary parent. Rather, Minamisawa selects the parent terminal based on only one set of state determination data, the single first set of data that is collected in fewer than K cycles.

It is well established under U. S. Patent Law that, for a reference to anticipate claim language under 35 USC 102,

that reference must teach each and every claim feature. Since the Minamisawa patent does not teach steps or means for operating each of the cluster members as the tentative cluster head in scheduled order, wherein the operating comprises monitoring the communication efficiency with each cluster member for each tentative cluster head, and selecting a cluster head among the radio stations composing the cluster based on a comparison of the monitored communication conditions, it cannot be maintained that Minamisawa anticipates the invention as claimed. Accordingly, Applicant respectfully request withdrawal of the anticipation rejections based on the Minamisawa patent.

Applicant respectfully asserts that the teachings of the Minamisawa patent also do not render the claims obvious, alone or in combination with the additionally-cited art. In fact, the Minamisawa patent can be construed as teaching away from the claim feature of creating and using a schedule for circulating the cluster head in order and gathering and using the communication conditions information, since Minamisawa expressly teaches that devices with low battery life cannot be selected to act as parent wireless terminals. Further, since Minamisawa teaches that the one set of state determination data that is first collected in fewer than K cycles be used for selecting the true parent terminal,

Minamisawa teaches away from continuing to collect data for all terminals before making a selection. Obviousness cannot be established under U. S. Patent Law when the reference being cited directs one skilled in the art away from (i.e., teaches away from) the invention as claimed.

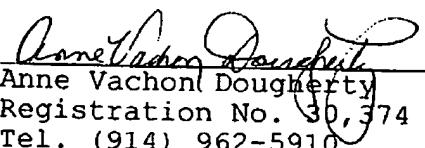
Applicant respectfully asserts that the additionally cited Haartsen and Tillgren do not provide those teachings which are missing from the Minamisawa patent. The Haartsen article has been cited for its teachings regarding master-slave configurations wherein direct communications between slave devices are not possible. Even if one were to modify Minamisawa with the master-slave configuration of Haartsen, one would not arrive at the invention as claimed, since neither reference teaches or suggests operating each device as a tentative cluster head, collecting data for each device as a tentative cluster head, and evaluating all of the collected data for selecting a cluster head. Accordingly, Applicant requests withdrawal of the rejections of Claims 2, 11, 16 and 17 based on the combination of teachings of Minamisawa and Haartsen.

Similarly, the addition of the Tillgren teachings to the Minamisawa patent would not yield the present invention as set forth in Claim 13. Tillgren teaches a system and method for connecting a telephone call to a wireless device.

In the cited passage, Tillgren teaches that a timer is set when the wireless link to an ongoing call is terminated, and that the call is terminated upon expiration of the timer, in order to extend the battery life of the wireless device. Adding a timer to Minamisawa would not result in the invention as claimed, since neither Minamisawa nor Tillgren teaches or suggests operating each device as a tentative cluster head, collecting communication condition information for each device as the tentative cluster head, and selecting a cluster head based on all of the collected information, let alone the foregoing with a present time for circulating the tentative cluster head responsibilities among the nodes. Accordingly, Applicant believes that the rejection based on the combination of Minamisawa and Tillgren should be withdrawn.

Based on the foregoing amendments and remarks, Applicant respectfully requests entry of the amendments, reconsideration of the amended claim language in light of the remarks, withdrawal of the rejections, and allowance of the claims.

Respectfully submitted,
T. Aihara

By: 
Anne Vachon Dougherty
Registration No. 30,374
Tel. (914) 962-5910

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-15-